

REMARKS

Before discussing the amendments to the claims and the rejections in the Action of June 4, 2003, applicant would like to express his gratitude to the Examiner, Mr. Alvo, for the courteous and helpful interview extended to their representatives, Ronald J. Kubovcik and Christoffer Sundman, on November 4, 2003. The substance of the interview is included in the following comments.

The specification has been amended to correct informalities. None of the amendments is believed to add new matter to the application.

Claim 1 has been amended to (1) limit the method of the invention to a method of producing a modified fiber product selected from printing paper and packaging material, (2) to limit the alkyl derivative of cellulose used to modify the properties of the cellulose fibers to alkali soluble carboxymethyl cellulose (CMC), the DS of which is 0.1 to 0.4 and the polymerization degree of which is about 600-5000, and to (3) recite that modified fiber product produced in the method has strength suitable for printing paper and packaging material. The limitation to printing paper and packaging material is supported in the specification on page 9,

line 27. The limitation to CMC having the specified DS and polymerization degree is supported in the specification on page 3, lines 14-16, page 4, lines 24-25, and page 6, lines 1-7 and 30-31. The recitation relating to the strength of the modified fiber product is supported in the specification, inter alia, on page 3, lines 24-31, and on page 9, lines 24-29.

New claims 27 and 28 which recite that the alkali soluble carboxymethyl cellulose is bonded to the fibers at a pH of about 7 to 10 and that treated pulp is filtered and washed subsequent to sorption, before introducing the pulp to the paper machine, respectively, have been added to the application. New claim 27 is supported in the specification on page 6, lines 20-22. New claim 28 is supported in the specification on page 8, lines 23-24.

The remaining amendments to the claims have been made to provide consistency with the amendments to claim 1.

Referring to the Action, the rejection of the claims under 35 U.S.C. § 112, second paragraph, is now moot since the recitation "water-soluble in mainly alkaline conditions" has been deleted from claim 1.

Reconsideration and removal of the 35 U.S.C. § 102 and, alternative, 35 U.S.C. § 103(a) rejections are respectfully requested. The claims as amended are not anticipated and are not *prima facie* obvious over the art cited in the rejections. More particularly, the primary reference relied on by the Examiner, JP 9-132896 A, is insufficient to support anticipation of the claims under 35 U.S.C. § 102 and is insufficient, alone or in combination with any of the secondary references, to support a case of *prima facie* obviousness under 35 U.S.C. § 103(a) of the claims.

As explained above, the method of the invention has been restricted to the use of a specific grade of alkyl derivative of cellulose, namely alkali soluble carboxymethyl cellulose, which has a degree of substitution (DS) of 0.1 to 0.4 and a degree of polymerization (DP) of 600 to 5000, and is characterized in that:

the fibrous suspension is admixed at alkaline conditions with the alkali soluble carboxymethyl cellulose, which has been dissolved in an alkaline solution, and

the derivative is allowed to attach to the fibrous raw-material before the drying of the fibrous material so that the attached cellulosic derivative cannot be removed by washing.

The product produced by the method has strength suitable for printing paper and packaging material, i.e., permanent strength.

JP 9-132,896 A, on the other hand, suggests using CMC having a DS of 0.3 to 0.6 at a pH of ≥ 5.0 for improving the wet strength and water-dispersibility of hydrolysable sheets that can be utilized as wet wipes. Wet strength is a temporary strength since wet wipes are typically used only once and are then discarded by being dispersed in water. Wet strength is distinct from the strength required for printing paper and packaging material, which must retain their strength after primary use, i.e., after printing and after being converted into packages, and which are not discarded by being dispersed in water.

JP 9-132,896 A does not disclose the conditions necessary for obtaining a fiber product having strength suitable for printing paper and packaging material. First, as pointed out on page 6, first paragraph, of the specification of the present application, proper sorption only takes place if the carboxymethyl cellulose is not too soluble in water at neutral conditions. The degree of substitution of conventional CMC grades (typically 0.5-0.6) is too high for achieving sufficient bonding. The DS must be below 0.5,

in particular, in the range of 0.1 to 0.4. The DS range of the reference (up to 0.6) is, therefore, too broad. Additionally, the degree of polymerization (DP) of the CMC must be in the range of 100 to 5,000 and, preferably, 600 to 5,000. Importantly, both of these prerequisites must be in force simultaneously. In JP 9-132,896 A, no attention is paid to the degree of polymerisation of the CMC for obtaining good strength properties.

Second, JP 9-132,896 A is unclear about the actual steps performed, and also of the result attained. In the last paragraph of the document [0013] (Advantages of the Invention) it is stated that the binder "dissolves when thrown in ample water, and renders the said hydrolysable sheets dispersible", according to the English translation.

By contrast, in the present invention, CMC will be attached to the fibres so that it cannot be washed away. Claim 1 of the present application recites this property, i.e., the claim recites that the CMC "can not be washed off with water."

JP 9-132,896 A is also not clear about the pH of the contacting. A pH in excess of 5.0 is described in the description and the claims, and the pH of the solution appears to be 6.1 in the

examples. But there is no information about the pH of the actual contacting step.

In the present invention, as recited in amended claim 1, the CMC should first be dissolved at alkaline conditions to provide a solution, and that solution should be contacted with a pulp slurry at alkaline conditions, preferably 7 to 10. As a result, the above-mentioned binding is achieved. JP 9-132,896 A also mentions first mixing together water-dispersible fibers and swellable or water-insoluble CMC, then adding bases.

In summary, the present invention is based on the new concept of binding to cellulose fibers a specific cellulose derivative which is alkali soluble, the bonding being carried out under conditions in which the derivative is so well bound that it cannot be washed away any more. The art fails to provide the necessary suggestion or motive required under 35 U.S.C. § 103(a) to modify the process disclosed in JP 9-132,896 A by choosing and selecting the properties of the CMC and the conditions necessary to obtain a printing paper or packaging material.

PATENT APPLN. NO. 09/674,289
RESPONSE UNDER 37 C.F.R. §1.111

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The secondary references represent a state of the art which is further away from the present invention and do not overcome the insufficiencies of JP 9-132,896 A.

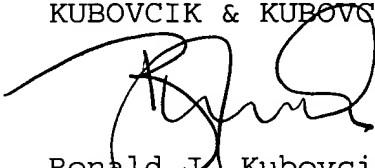
The foregoing is believed to be a complete and proper response to the Office Action dated June 4, 2003, and is believed to place this application in condition for allowance. If, however, minor issues remain that can be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number indicated below.

In the event that this paper is not considered to be timely filed, applicant hereby petitions for an appropriate extension of time. The fee for any such extension may be charged to our Deposit Account No. 111833.

In the event any additional fees are required, please also charge our Deposit Account No. 111833.

Respectfully submitted,

KUBOVCIK & KUBOVCIK



Ronald J. Kubovcik
Reg. No. 25,401

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Atty. Case No. LAIN-033
The Farragut Building
Suite 710
900 17th Street, N.W.
Washington, D.C. 20006
Tel: (202) 887-9023
Fax: (202) 887-9093
RJK/cfm